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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): BHD-4662-282

Application Number	Filed
10/501,902	July 20, 2004
First Named Inventor: WANG	
Art Unit: 1796	Examiner: Nutter

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

☐ Applicant/Inventor

☐ Assignee of record of the entire interest. See 37 C.F.R. § 3.71. Statement under 37 C.F.R. § 3.73(b) is enclosed. (Form PTO/SB/96)

☒ Attorney or agent of record 30,251 (Reg. No.)

☐ Attorney or agent acting under 37CFR 1.34.
Registration number if acting under 37 C.F.R. § 1.34 _____

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Signature

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Typed or printed name

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Requester's telephone number

February 25, 2009
Date

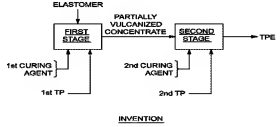
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.*

☒ *Total of 1 form/s are submitted.

APPLICANTS' REASONS IN SUPPORT OF PRE-APPEAL BRIEF REQUEST FOR REVIEW

1. The Claimed Invention

One principal distinction between the presently claimed invention and the applied prior art of record (e.g., Wang et al, USP 5,936,039) is that ***two dynamic vulcanization*** stages are employed to form the thermoplastic elastomer (TPE). Thus, in a first vulcanization stage according to the present invention, an elastomer, a first thermoplastic polymer and a first curing agent are compounded (melt-mixed) with one another under dynamic vulcanization conditions to obtain a partially vulcanized rubber concentrate. Thereafter, in a second dynamic vulcanization stage, the partially vulcanized rubber concentrate is compounded (melt-mixed) with ***additional amounts*** of both a second thermoplastic polymer and a second curing agent. A schematic representation of the presently claimed invention is depicted below.



INVENTION

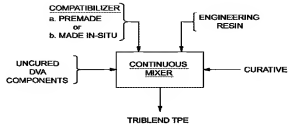
2. The Examiner's Art- Based Rejection is Erroneous

(i) The Examiner has Erroneously Misinterpreted Wang et al

The Examiner seems to be of the mistaken belief that Wang et al discloses "…a two-step process that provides a partially cured DVA for addition to a second thermoplastic with subsequent further dynamic vulcanization." (Office Action at page 2, ultimate paragraph.) Applicants respectfully suggest that the Examiner's reading of Wang et al is factually flawed which has therefore led to a legally erroneous rejection of the claims.

Wang et al is directed toward the preparation of a triblend TPE of (1) an engineering resin, (2) a dynamically vulcanized alloy (DVA) of a thermoplastic olefin polymer and an elastomeric copolymer and (3) a compatibilizer for components (1) and (2). (Abstract and column 4, lines 14-16.) Wang et al contemplates either a one-step process wherein the triblend TPE is produced in a single step in a single process vessel, such as a twin-screw extruder

(column 7, lines 16-21 and column 8, lines 50-54). Schematically, the one-step process of Wang et al can be depicted as follows:



ONE-STEP

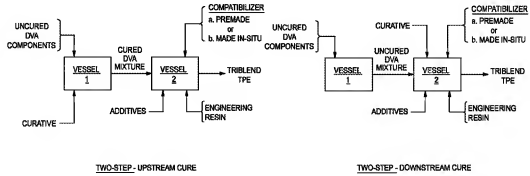
Alternatively, a two-step process is disclosed in Wang et al wherein the triblend TPE is produced in multiple steps using either multiple process vessels or multiple passes through the same process vessel. (column 7, lines 65-66.) The uncured DVA components may either be mixed together without vulcanization or may be mixed together and vulcanized prior to the addition of the other two components, namely the engineering resin and compatibilizer (which itself may be pre-made or made in-situ). Thus, in either the proposed batch, batch-continuous or continuous two-step processes proposed by Wang et al, the uncured DVA components can simply be mixed together in a first process vessel without curing and then transferred to a continuous process vessel (e.g., an extruder) where curative, engineering resin and compatibilizer are added. (Column 7, line 66 through column 8, lines 47.) In this scenario, the uncured DVA components are vulcanized (cured) in the second process vessel (or the second pass through the same vessel), that is a downstream cure procedure.

Alternatively, according to Wang et al, the first step of the two-step process (either batch, batch-continuous or continuous) may be practiced in such a way that the uncured DVA components are cured (vulcanized), that is an upstream cure procedure. Specifically, at column 7, lines 23-24, Wang et al instruct that:

> "In [the two-step procedure] the first vessel [or the first pass through the same vessel] the *uncured* components of the DVA can be mixed and alternatively vulcanized. The *premixed* **or** *vulcanized materials* are then fed into a second vessel or a second pass through the same vessel where they are then **either** *subsequently vulcanized* **or** *then blended with the compatibilizer and the engineering resin.* (Column 7, lines 23-28, emphasis added.)

Thus, Wang et al explicitly teaches that only a ***single*** vulcanization stage is employed. In other words, if the DVA and other components are premixed in a first step, then the DVA components are vulcanized in a second step. Alternatively, if the components are first vulcanized in a first step, then they are mixed with the other components in a second step. While the timing of the addition of the other components may vary, Wang et al nonetheless makes it clear that one – and only one – vulcanization stage is contemplated.

Thus, the two different scenarios of the two-step processes – i.e., an upstream cure procedure and a downstream cure procedure -- disclosed by Wang et al (either batch, batch-continuous or continuous) may be schematically depicted by the following:



The Examiner seems to read various parts of Wang et al in complete isolation and *not* within the context of the entire disclosure therein. Thus, for example, the Examiner apparently seizes on the passage in Wang et al at column 3, lines 40-44 with regard to the possibility that the elastomer may be "partially cured" during the dynamic vulcanization. However, this passage simply informs the reader that, in the triblend TPE of Wang et al, a fully cured DVA component is not necessarily needed. Instead, according to Wang et al at column 3, lines 40-44, the resulting triblend TPE can tolerate a partially cured DVA even though a fully cured DVA is preferred. This passage by itself is not suggestive at all of ***multiple*** curing stages.

The Examiner also apparently seizes on the disclosure appearing in Example 1 at column 9 and Table I bridging columns 9 and 10 of Wang et al as disclosing a "first curing agent' in the form of ZnO. While Wang et al does disclose at column 5, lines 17-21 that metal oxides may be a "curative" to achieve dynamic vulcanization of the DVA components, its mere presence in the "Masterbatch" of Example 1 does not in and of itself translate into a dynamic

vulcanization of the Masterbatch components as the Examiner erroneously concludes. Indeed, Wang et al ***explicitly*** state that the Masterbatch is ***"uncured"***.[1]

The fact that ZnO is disclosed by Wang et al to be a "curative" and is in fact present in the Masterbatch of Example 1 clearly does not imply anything contrary to what Wang et al explicitly states – that is, that the Masterbatch is "uncured". Thus, the presence of ZnO in the Masterbatch of Example 1 does not imply that some spontaneous curing occurs notwithstanding the explicit statement by Wang et al that the Masterbatch is in fact "uncured". In this regard, Wang et al note that:

> "Those ordinarily skilled in the art will appreciate the appropriate quantities, types of cure systems and *vulcanization conditions* required to carry out the vulcanization of the rubber. The elastomer can be vulcanized using varying amounts of curative, varying temperatures and varying time of cure in order to obtain the optimum crosslinking desired. Any known cure system can be used, so long as it is suitable under the *vulcanization conditions* of the elastomer or combination of elastomers being used and is compatible with the thermoplastic polyolefin component of the DVA." (Column 5, lines 7-17, emphasis added)

It is clear therefore that, while ZnO may in fact be physically present in the Masterbatch of Example 1, the Masterbatch most certainly is ***not*** subjected to "vulcanization conditions" in the presence of the ZnO curative since the Masterbatch is "uncured" after being melt-mixed to form a homogenous blend. (Column 9, lines 27-30.) It is this uncured homogenous Masterbatch blend that is then transferred to the extruder to undergo vulcanization. (Column 9, lines 30-35.)

Uncured of course means "not cured". It most certainly does mean "partially cured". Thus, the Examiner cannot distort the explicit language in Wang et al in an effort to justify his rejection. Nor can this explicit language in Wang et al be ignored as to what it in fact means, i.e., uncured means "not cured". This is especially true in light of the other disclosure in Wang et al at column 7, line 65 through column 8, line 47 as discussed above.

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[1] *"The blend was removed from the mixer and the uncured masterbatch was added to the inlet...."*; Column 1, lines 30-32, emphasis added. See also, the explicit characterization of the Masterbatch as being "Un-cured" in Table I at column 9, line 64.

That Wang et al does ***not*** disclose or suggest ***two dynamic vulcanization stages*** should now be clear. Self-evidently, therefore, Wang et al does ***not*** disclose or suggest that the ***same*** thermoplastic and/or the ***same*** curing agents may be used in such two dynamic vulcanization stages as defined, e.g., by pending claims 37 and 41.

(ii) The Examiner has Erroneously Misinterpreted Rinehart

The Examiner similarly erroneously reads the Rinehart patent. Specifically, while Rinehart does in fact disclose that a "partial curing" may be practiced, it is quite clear that a two-stage vulcanization technique is not contemplated. That is, Rinehart specifically discloses that the "partial curing" is to allow the blend to exhibit thermoplastic behavior ***without requiring further cure***. (*"It will be understood that the thus dynamically semi-cured blend remains a thermoplastic material that can be reprocessed repeatedly, but it has elastomeric properties without requiring further cure."*) Moreover, Rinehart references USP 3,806,558 as further disclosing the technique of partial curing. The '558 patent specifically provides "*...thermoplastic elastomers which can be molded or otherwise shaped without necessity for preforming an expensive and time-consuming vulcanization step in the shaped article."* (column 1, lines 60-64.)

3. Conclusion

The rejections advanced under 35 USC §102(b) based on Wang et al and Rinehart must therefore be withdrawn.

Respectfully submitted,

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